AMENDMENT TO THE CLAIMS

1. (Currently Amended) A distance correcting apparatus of a surroundings monitoring system, comprising:

stereo imaging ~~means~~ cameras for ~~stereoscopically taking~~ producing a pair of stereoscopic images including a reference image and a comparison image;

parallax calculating means for calculating a parallax for a pixel block ~~based on said pair of images by~~ including calculating a horizontal deviation amount between the reference and comparison images;

distance calculating means for calculating a distance to an object based on said pixel block parallax and a ~~first parameter for correcting said distance~~ vanishing point parallax;

approximation line calculating means for calculating a plurality of approximation lines extending in the distance direction in parallel with each other based on said images;

vanishing point calculating means for calculating a vanishing point of said images from a point of intersection of said approximation lines; ~~and~~

reference object detecting means for calculating a lane marker model expressing a change of a road surface height with respect to distance;

means for identifying a condition of change of an actual road surface height based on said vanishing point, and for identifying a condition of change of a calculated road surface height based on said lane marker model; and

parameter correcting means for correcting said ~~first parameter based on said~~ vanishing point parallax so that said condition of change of said calculated road surface height becomes close to said condition of change of said actual road surface height.

2. (Currently Amended) The <u>distance correcting</u> apparatus according to claim 1, ~~further~~ ~~comprising:~~ <u>wherein</u>

~~a reference object detecting means for detecting a plurality of reference objects~~ ~~extending in the distance-direction in parallel with each other from a scenery projected in~~ ~~said images and for identifying a position of said reference objects in an image plane of said~~ ~~images~~ <u>said parameter correcting means corrects vanishing point parallax by reducing a</u> <u>deviation between a first gradient indicating said condition of change of road surface height</u> <u>with respect to distance and a second gradient indicating said condition of change of actual</u> <u>road surface height</u>.

3. (Original) The apparatus according to claim 2, wherein

said vanishing point calculating means calculates an approximation line in said image plane for respective reference objects, when a plurality of reference objects are detected by said reference objects detecting means.

4. (Currently Amended) The apparatus according to claim 2, wherein

said reference objects are lane markers on a road projected in said images and when left and right lane markers are detected on said road, <u>and</u>

said vanishing point calculating means calculates an approximation line in said image plane for said respective left and right lane markers.

5. (Original) The apparatus according to claim 4, wherein

said vanishing point calculating means calculates said approximation line based on said left and right lane markers existing within a specified distance range.

6. (Cancelled)

7. (Cancelled)

8. (Currently Amended) The apparatus according to claim 4, wherein

said vanishing point calculating means judges whether or not a lane marker projected in said images is a straight line and ~~in case where it is~~ when so judged ~~that said lane marker is a straight line~~, calculates said vanishing point of said images.

9. (Original) The apparatus according to claim 8, wherein

said vanishing point calculating means evaluates a time-versus change of the position of a lane marker projected in said images, if said time-versus change is small, judges that said lane marker has a high reliability as lane markers, and calculates said vanishing point in said images.

10. (Cancelled)

11. (Currently Amended) A distance correcting apparatus of a surroundings monitoring system, comprising:

stereo ~~imaging means~~ <u>cameras</u> for ~~stereoscopically taking~~ <u>producing</u> a pair of <u>stereoscopic</u> images including a reference image and a comparison image;

transforming means for geometrically transforming said reference and comparison images based on a first parameter indicating a transference in the horizontal direction;

parallax calculating means for calculating a parallax based on said pair of images by calculating a horizontal deviation amount between the reference and comparison images;

distance calculating means for calculating a distance to an object based on said parallax <u>and a first parameter for correcting said distance</u>;

vanishing point calculating means for calculating a plurality of approximation lines extending in the distance direction in parallel with each other and calculating a vanishing point of said images from a point of intersection of said approximation lines; ~~and~~

<u>reference object detecting means for calculating a lane marker model expressing a change of a road surface height with respect to distance;</u>

<u>means for identifying a condition of change of an actual road surface height based on said vanishing point, and for identifying a condition of change of a calculated road surface height based on said lane marker model; and</u>

parameter correcting means for correcting said first parameter ~~based on said vanishing point~~ <u>so that said condition of change of said calculated road surface height becomes close to said condition of change of said actual road surface height.</u>

12. (Currently Amended) The apparatus according to claim 11, ~~further comprising:~~ <u>wherein</u>
~~a reference object detecting means for detecting a plurality of reference objects~~
~~extending in the distance direction in parallel with each other from a scenery projected in~~

~~said images and for identifying a position of said reference objects in an image plane of said~~ ~~images~~ said parameter correcting means corrects said first parameter by reducing a deviation between a first gradient indicating said condition of change of road surface height with respect to distance and a second gradient indicating said condition of change of actual road surface height.

13. (Original) The apparatus according to claim 12, wherein

said vanishing point calculating means calculates an approximation line in said image plane for respective reference objects, when a plurality of reference objects are detected by said reference objects detecting means.

14. (Original) The apparatus according to claim 12, wherein

said reference objects are lane markers on a road projected in said images and when left and right lane markers are detected on said road, said vanishing point calculating means calculates an approximation line in said image plane for said respective left and right lane markers.

15. (Original) The apparatus according to claim 14, wherein

said vanishing point calculating means calculates said approximation line based on said left and right lane markers existing within a specified distance range.

16. (Cancelled)

17. (Cancelled).

18. (Currently Amended)The apparatus according to claim 14, wherein

said vanishing point calculating means judges whether or not a lane marker projected in said images is a straight line and ~~in case where it is~~ and when so judged ~~that said lane marker is a straight line~~, calculates said vanishing point of said images.

19. (Original) The apparatus according to claim 18, wherein

said vanishing point calculating means evaluates a time-versus change of the position of a lane marker projected in said images, if said time-versus change is small, judges that said lane marker has a high reliability as lane markers, and calculates said vanishing point in said images.

20. (Previously Presented) A vanishing point correcting apparatus of a surroundings monitoring system for taking images of a scenery in front of a vehicle and for obtaining a three-dimensional information of an object projected in said images by making use of an established vanishing point established beforehand, comprising:

reference object detecting means for detecting lane markers on a road projected in said images and for identifying a position of said lane markers on an image plane of said images;

vanishing point calculating means, when a left and right lane marker is detected on said road and it is judged that said lane marker projected in said images is a straight line, for calculating an approximation line in said image plane for said respective left and right lane

markers and for calculating a vanishing point from a point of intersection of said approximation lines; and

a vanishing point correcting means for correcting said established vanishing point so that said established vanishing point comes close to said vanishing point calculated by said vanishing point calculating means.

21. (Original) The apparatus according to claim 20, wherein

said vanishing point calculating means evaluates a time-versus change of the position of a lane marker projected in said images, if said time-versus change is small, judges that said lane marker has a high reliability as lane markers, and calculates said vanishing point in said images.